

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

1. (previously presented): Method for producing a plate of steel which is resistant to abrasion and whose chemical composition comprises, by weight:

$$0.24\% \leq C < 0.35\%$$

$$0\% \leq Si \leq 2\%$$

$$0\% \leq Al \leq 2\%$$

$$0.5\% \leq Si + Al \leq 2\%$$

$$0\% \leq Mn \leq 2.5\%$$

$$0\% \leq Ni \leq 5\%$$

$$0\% \leq Cr \leq 5\%$$

$$0\% \leq Mo \leq 1\%$$

$$0\% \leq W \leq 2\%$$

$$0.1\% \leq Mo + W/2 \leq 1\%$$

$$0\% \leq B \leq 0.02\%$$

$$0\% \leq Ti \leq 1.1\%$$

$$0\% \leq Zr \leq 2.2\%$$

$$0.5\% < Ti + Zr/2 \leq 1.1\%$$

$$0\% \leq S \leq 0.15\%$$

$$N < 0.03\%$$

- optionally up to 1.5% of copper,

- optionally at least one element selected from Nb, Ta and V at contents such that $Nb/2 + Ta/4 + V \leq 0.5\%$,

- optionally at least one element selected from Se, Te, Ca, Bi, Pb at contents which are less than or equal to 0.1%,

the balance being iron and impurities resulting from the production operation, the chemical composition further complying with the following relationships:

$$C^* = C - Ti/4 - Zr/8 + 7xN/8 \geq 0.095\%$$

and:

$$1.05xMn + 0.54xNi + 0.50xCr + 0.3x(Mo + W/2)^{1/2} + K > 1.8$$

with: $K = 0.5$ if $B \geq 0.0005\%$ and $K = 0$ if $B < 0.0005\%$.

according to which the plate is subjected to a thermal quenching processing operation which is carried out in the heat for rolling in the hot state or after austenitization by reheating in a furnace, in order to carry out the quenching:

- the plate is cooled at a mean cooling rate greater than 0.5°C/s between a temperature greater than AC_3 and a temperature of from approximately $T = 800 - 270xC^* - 90xMn - 37xNi - 70xCr - 83x(Mo + W/2)$, to $T - 50^\circ\text{C}$,

- the plate is then cooled at a mean core cooling rate $V_r < 1150xep^{-1.7}$ and greater than 0.1°C/s between the temperature T and 100°C , ep being the thickness of the plate expressed in mm,

- the plate is cooled as far as ambient temperature and optionally planishing is carried out.

2. (previously presented): Method according to claim 1, wherein:

$$1.05xMn + 0.54xNi + 0.50xCr + 0.3x(Mo + W/2)^{1/2} + K > 2.$$

3. (canceled).

4. (previously presented): Method according to claim 1, wherein:

$$C^* \geq 0.12\%.$$

5. (previously presented): Method according to claim 1, wherein:

$$Si + Al \geq 0.7\%.$$

6. (previously presented): Method according to claim 1, wherein tempering is further carried out at a temperature which is less than or equal to 350°C.

7. (previously presented): Method according to claim 1, wherein, the chemical composition of the steel is obtained by a melting process during which or after the steel is placed in contact with a slag containing titanium and the titanium of the slag is caused to diffuse in the steel which is in a liquid state.

8. (currently amended): A plate of steel which is resistant to abrasion and whose chemical composition comprises, by weight:

$$0.24\% \leq C < 0.35\%$$

$$0\% \leq Si \leq 2\%$$

$$0\% \leq Al \leq 2\%$$

$$0.5\% \leq Si + Al \leq 2\%$$

$$0\% \leq Mn \leq 2.5\%$$

$$0\% \leq Ni \leq 5\%$$

$$0\% \leq Cr \leq 5\%$$

$$0\% \leq Mo \leq 1\%$$

$$0\% \leq W \leq 2\%$$

$$0.1\% \leq Mo + W/2 \leq 1\%$$

$$0\% \leq B \leq 0.02\%$$

$$0\% \leq Ti \leq 1.1\%$$

$$0\% \leq \text{Zr} \leq 2.2\%$$

$$0.5\% < \text{Ti} + \text{Zr}/2 \leq 1.1\%$$

$$0\% \leq \text{S} \leq 0.15\%$$

$$\text{N} < 0.03\%$$

- optionally up to 1.5% of copper,
- optionally at least one element selected from Nb, Ta and V at contents such that $\text{Nb}/2 + \text{Ta}/4 + \text{V} \leq 0.5\%$,
- optionally at least one element selected from Se, Te, Ca, Bi, Pb at contents which are less than or equal to 0.1%,

the balance being iron and impurities resulting from the production operation, the chemical composition further complying with the following relationships:

$$\underline{C^*} = C - \text{Ti}/4 - \text{Zr}/8 + 7\text{xN}/8 \geq 0.095\%$$

and:

$$1.05\text{xMn} + 0.54\text{xNi} + 0.50\text{xCr} + 0.3\text{x}(\text{Mo} + \text{W}/2)^{1/2} + K > 1.8$$

with: $K = 0.5$ if $B \geq 0.0005\%$ and $K = 0$ if $B < 0.0005\%$,

the steel having a martensitic or martensitic/bainitic structure, the structure containing from 5% to 20% of retained austenite and carbides.

9. (previously presented): A plate according to claim 8, characterized in that:

$$1.05\text{xMn} + 0.54\text{xNi} + 0.50\text{xCr} + 0.3\text{x}(\text{Mo} + \text{W}/2)^{1/2} + K > 2.$$

10. (canceled).

11. (previously presented): A plate according to claim 8, wherein:

$$C^* \geq 0.12\%.$$

12. (previously presented): A plate according to claim 8, wherein:

$$\text{Si} + \text{Al} \geq 0.7\%$$

13. (previously presented): A plate according claim 8, wherein the plate has a thickness of from 2 mm to 150 mm.